

## CLAIMS

1. Process for obtaining a hydrocarbon fraction that can be used as a feedstock of an etherification unit and that contains a small amount of diene compounds, nitrogen-containing compounds and sulfur-containing compounds, starting from an initial hydrocarbon feedstock that comprises a mixture of olefins, dienes, and nitriles as well as sulfur-containing compounds, whereby said process comprises at least the following successive stages:

- a) a selective hydrogenation of said initial hydrocarbon feedstock in the presence of a catalyst that comprises at least one metal of group VIII and another metal of group VIB of the periodic table,
- b) a fractionation by distillation of the effluents that are obtained from stage a) under conditions that make it possible to obtain at least two fractions including
  - said hydrocarbon fraction and that comprises a small amount of diene compounds, nitrogen-containing compounds and sulfur-containing compounds, and
  - a heavy fraction that contains heavy hydrocarbons and the majority of the nitrogen-containing and sulfur-containing compounds obtained from the hydrogenation of stage a).

2. Process according to claim 1, in which the metal of group VIII is selected from the group that consists of platinum, palladium and nickel.

3. Process according to claim 2, in which the catalyst contains 1% by weight to 20% by weight of nickel that is deposited on an inert substrate.

4. Process according to claim 1, in which the metal of group VIII is cobalt.
5. Process according to one of the preceding claims, in which said catalyst comprises 1% by weight to 20% by weight of metal of group VIB.
6. Process according to one of the preceding claims, in which the metal of group VIB is molybdenum or tungsten.
7. Process according to one of the preceding claims, in which said catalyst operates under a pressure of 0.4 to 5 MPa, at a temperature of 50 to 300°C with an hourly volumetric flow rate of the feedstock of 1 h<sup>-1</sup> to 12 h<sup>-1</sup>.
8. Process according to one of the preceding claims, in which said hydrogenation is carried out in the presence of an amount of hydrogen that slightly exceeds the stoichiometric value that is necessary for hydrogenating all of the dienes that are present in the initial hydrocarbon feedstock.
9. Process according to one of the preceding claims, in which said hydrocarbon fraction has a higher boiling point that is less than 100°C.
10. Process according to claim 6, in which said boiling point is less than 60°C.